

ABSTRACT OF THE DISCLOSURE

A semiconductor wafer inspection system and method is provided which uses a multiple element arrangement, such as an offset fly lens array. The preferred embodiment uses a laser to 5 transmit light energy toward a beam expander, which expands the light energy to create an illumination field. An offset fly lens array converts light energy from the illumination field into an offset pattern of illumination spots. A lensing arrangement, including a first lens, a transmitter/reflector, an objective, 10 and a Mag tube imparts light energy onto the specimen and passes the light energy toward a pinhole mask. The pinhole mask is mechanically aligned with the offset fly lens array. Light energy passing through each pinhole in the pinhole mask is directed toward a relay lens, which guides light energy onto a 15 sensor. The offset fly lens array corresponds to the pinhole mask. The offset pattern of the offset fly lens array is chosen such that spots produced can be recombined into a continuous image, and the system utilizes a time delay and integration charge coupled device for rapid sensing along with an autofocus 20 system that measures and cancels topological features of the specimen.